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Ronald Dekker

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EXAMINER

NADAV, ORI

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2811

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/563,416 | Applicant(s) DEKKER ET AL. | |
| | Examiner Ori Nadav | Art Unit 2811 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) 18-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>1/3/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

Applicant's election of claims 1-17 in the reply filed on 7/1/2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the semiconductor elements, the electrically conductive layer and the at least one conductor, recited in claim 1, a passivation, as recited in claim 3, the active area of the substrate is in the shape of a mesa, as recited in claim 4, the integrated circuit is subdivided into a plurality of circuit blocks interconnected through the interconnect structure, as recited in claim 8, device comprises active areas and a non-substrate area is defined laterally between the active areas and around these areas, as recited in claim 9, a perpendicular projection of the integrated circuit onto the electrically conductive layer of the antenna at least substantially overlaps with the antenna, as recited in claim 10, a carrier, as recited in claim 12, a security paper, as recited in claims 11, 14, 15 and 16, an identification label, as recited in claims 12-16, conducting elements, as recited in claim 13, carrier comprises security paper which paper encapsulates the flexible device, as recited in

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claim 14, an identification document, as recited in claim 16, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 10 is objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim 12, 13 or 14. See MPEP § 608.01(n). Accordingly, the claim 10 is not been further treated on the merits.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. There is no adequate description in the disclosure for the claimed limitation of “an antenna, which is defined laterally outside the active area in an electrically conductive layer”, as recited in claim 1, because the disclosure and the drawings describe an antenna in an insulating layer 4.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claimed limitation of an integrated circuit, as recited in claim 1, is unclear to the structural relationship between the integrated circuit and the semiconductor device.

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The claimed limitation of “that is present in a suitable thickness so as to be flexible”, as recited in claim 1, is unclear to which element is present in a suitable thickness, and which element is flexible.

The claimed limitation of “which elements are interconnected according to a desired pattern in an interconnect structure”, as recited in claim 1, is unclear as to which elements are interconnected according to a desired pattern in an interconnect structure?

The claimed limitation of a support layer, as recited in claim 1, is unclear to the structural relationship between the support layer and the semiconductor device.

The claimed limitation of “an antenna, which is defined laterally outside the active area”, as recited in claim 1, is unclear as to what is meant by “defined laterally”.

The claimed limitation of “to constitute the electrical interconnection”, as recited in claim 1, is unclear as to which electrical interconnection and between elements applicant refers.

The claimed limitations of “a flexible semiconductor device”, as recited in claims 2-3 and 17, “a flexible device”, as recited in claims 4-8, and “a device”, as recited in

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claims 9-10, are unclear to the structural relationship between the flexible device and the semiconductor device.

The claimed limitation “the active area of the substrate”, as recited in claim 4, is unclear as to what is meant by “the active area of the substrate” since the semiconductor substrate laterally extends into the active area.

The claimed limitation “the integrated circuit is laterally located within the inductor”, as recited in claim 7, is unclear as to how the integrated circuit is laterally located within the inductor since the integrated circuit 5 is laterally spaced apart from the inductor 6.

The claimed limitation of “device comprises active areas”, as recited in claim 9, is unclear as to the location of the active areas, and whether the previously recited active area is part of the active areas.

The claimed limitation of “device comprises active areas corresponding to the circuit blocks”, as recited in claim 9, is unclear as to what structural relationship the term “corresponding” refers.

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The claimed limitation of “a non-substrate area”, as recited in claim 9, is unclear as to whether the element “a non-substrate area” is the same element as the “a non-substrate area” recited in independent claim 1, or a different element.

The claimed limitation of “a perpendicular projection of the integrated circuit onto the electrically conductive layer of the antenna at least substantially overlaps with the antenna, as recited in claim 10, is unclear how the perpendicular projection of the integrated circuit overlaps with the antenna since the integrated circuit 5 is spaced apart from the antenna 6.

The claimed limitation of “carrier comprises security paper, which paper encapsulates the flexible device”, as recited in claim 14, is unclear as to “which paper encapsulates the flexible device”.

The claimed limitations of a security paper, an identification label, an identification document and an apparatus, as recited in claims 11-17, are rendered indefinite, because the security paper, the identification label, the identification document and the apparatus do not further limit the flexible semiconductor device recited in independent claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 5-7 and 17, as best understood, are rejected under 35 U.S.C. 102(e) as being anticipated by Hirai et al. (6,607,135).

Hirai et al. teach in figure 1 and related text an apparatus being a flexible semiconductor device comprising:

a semiconductor substrate (within chip 2), which laterally extends in an active area;

an integrated circuit 2 provided with a plurality of semiconductor elements (inside chip 2), that are defined at a surface of the semiconductor substrate, that is present in a suitable thickness so as to be flexible, and which elements are interconnected according to a desired pattern in an interconnect structure,

a support layer 4 of electrically insulating material, and

an antenna 3, which is defined laterally outside the active area in an electrically conductive layer adjacent to the support layer and is electrically connected to the interconnect structure, the semiconductor substrate being absent in a non-substrate area between the antenna and the integrated circuit,

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characterized in that at least one conductor (inside chip 2) from the interconnect structure extends laterally to the antenna so as to constitute the electrical interconnection,

wherein the integrated circuit is devoid of any bond pad structures, and
characterized in that the semiconductor substrate is present only in the active area, and

characterized in that the antenna is an inductor suitable for wireless communication,

wherein the integrated circuit is laterally located within the inductor.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4 and 8-16, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Hirai et al. (6,607,135).

Regarding claim 3, Hirai et al. teach in figure 1 and related text substantially the entire claimed structure, as applied to claims above, except explicitly stating that the integrated circuit is provided with a passivation, the interconnect structure being sandwiched between the passivation and the semiconductor substrate, and the support

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layer is part of the passivation of the integrated circuit.

It would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the integrated circuit with a passivation, such that the interconnect structure being sandwiched between the passivation and the semiconductor substrate, and the support layer is part of the passivation of the integrated circuit in Hirai et al.'s device in order to provide protection to the integrated circuit by using conventional isolation means. Note that the device will not operate without passivation layer.

Regarding claim 4, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the active area of the substrate in the shape of a mesa in Hirai et al.'s device in order to provide better electrical isolation to the active area.

Regarding claims 8-9, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to subdivide the integrated circuit into a plurality of circuit blocks, which are mutually spaced apart, but interconnected through the interconnect structure, wherein the device comprises active areas corresponding to the circuit blocks, and a non-substrate area is defined laterally between the active areas and around these areas, the semiconductor substrate being absent in said non-substrate area in Hirai et al.'s device, in order to use the device in an application which requires plurality of circuit blocks.

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Regarding claim 10, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form a perpendicular projection of the integrated circuit onto the electrically conductive layer of the antenna at least substantially overlaps with the antenna in Hirai et al.'s device in order to reduce the size of the device.

Regarding claims 11-16, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Hirai et al.'s device as a security paper, an identification label that is suitable for banknote or security paper, and an identification label comprising a carrier comprises security paper which paper encapsulates the flexible device, and comprising conducting elements in order to improve wireless energy transmission, in order to use the device in an application which requires a security paper or an identification label that is suitable for banknote or security paper.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Reference B is cited as being related to IC card.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ori Nadav whose telephone number is 571-272-1660. The examiner can normally be reached between the hours of 7 AM to 4 PM (Eastern Standard Time) Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lynne Gurley can be reached on 571-272-4670. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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